IN THE CLAIMS:

1-53. (cancelled)

54. (new) A method for detecting a target nucleic acid sequence, the method comprising:

a) providing one or more target probes comprising a linear single-stranded DNA molecule, the target probes comprising at least two target-complementary sequences that are not joined to each other, wherein the 5'-end of a first target-complementary sequence is complementary to the 5'-end of the target nucleic acid sequence, and wherein the 3'-end of a second target-complementary sequence is complementary to the 3'-end of the target nucleic acid sequence, and wherein the target probe that comprises the first target-complementary sequence also comprises a promoter that is joined to the 3'-of the first target-complementary sequence, wherein the promoter binds an RNA polymerase that lacks helicase-like activity and that can transcribe RNA using a single-stranded promoter;

b) contacting the target probes with the target nucleic acid sequence and incubating under hybridization conditions, such that the target-complementary sequences anneal adjacently to the target nucleic acid sequence to form a target probe-target complex;

c) contacting the target probe-target complex with a ligase under ligation conditions to form a transcription substrate;

d) contacting the transcription substrate with the RNA polymerase to form a transcription product; and

e) detecting the transcription product.

55. (new) The method of claim 54, further comprising repeating steps (a) through (d) or steps (a) through (e).

56. (new) The method of claim 54, wherein the target nucleic acid sequence comprises a single-stranded DNA molecule obtained by reverse transcription of RNA.

57. (new) The method of claim 54, wherein the target nucleic acid sequence comprises a DNA

target nucleic acid in a sample.

58. (new) The method of claim 54, wherein the target nucleic acid sequence comprises a DNA target nucleic acid that is a product of an amplification reaction.

59. (new) The method of claim 54, wherein the target nucleic acid sequence comprises a product of rolling circle replication.

60. (new) The method of claim 58, wherein the amplification reaction is selected from the group consisting of PCR, RT-PCR, NASBA, TMA, 3SR, LCR, LLA, SDA, Multiple Displacement Amplification, ICAN™, UCAN™, Loop-AMP, SPIA™ and Ribo-SPIA™.

61. (new) The method of claim 54, wherein the one or more target probes comprise a bipartite target probe.

62. (new) The method of claim 54, wherein the target probe comprising the second target-complementary sequence also comprises a signal sequence 5'-of said target-complementary sequence.

63. (new) The method of claim 62, wherein the signal sequence encodes a substrate for Q-beta replicase.

64. (new) The method of claim 62, wherein the signal sequence encodes green fluorescent protein.

65. (new) The method of claim 61, wherein the bipartite target probe comprises a transcription termination sequence 5'-of the second target-complementary sequence.

66. (new) The method of claim 61, wherein the bipartite target probe comprises two target-complementary sequences that can anneal adjacently to the target nucleic acid sequence.

67. (new) The method of claim 61, wherein the one or more target probes comprise a promoter target probe comprising the first target-complementary sequence and a signal target probe comprising the second target-complementary sequence.

68. (new) The method of claim 67, wherein the signal target probe comprises a signal sequence 5'-of the second target-complementary sequence.

69. (new) The method of claim 68, wherein the signal sequence encodes a substrate for Q-beta replicase.

70. (new) The method of claim 68, wherein the signal sequence encodes green fluorescent protein.

71. (new) The method of claim 67, wherein the first target-complementary sequence and the second target-complementary sequence can anneal adjacently to the target nucleic acid sequence.

72. (new) The method of claim 54, wherein one target probe is provided.

73. (new) The method of claim 54, wherein two target probes are provided.

74. (new) The method of claim 54 wherein the number of provided target probes is selected from the group consisting of 3, 4, 5, 6, 7, 8, 9, and 10.

75. (new) The method of claim 54, wherein the transcription product comprises at least one pyrimidine 2'-deoxyribonucleotide having a 2'-substituent on the sugar moiety.

76. (new) The method of claim 54, wherein the transcription product comprises AMP, GMP, 2'-F-dUMP and 2'-F-dCMP.

77. (new) The method of claim 75, wherein the 2'-substituent on the sugar moiety is selected from the group consisting of: an amino group, an azido group, a fluoro group, and a methoxy group.

78. (new) A method for detecting a target nucleic acid sequence, the method comprising:

a) providing a target sequence amplification probe (TSA probe) comprising a linear single-stranded DNA molecule comprising a 5'-end portion and a 3'-end portion that are not joined, wherein the 5'-end portion is complementary to the 5'-end of the target nucleic acid sequence, and wherein the 3'-end portion is complementary to the 3'-end of the target nucleic acid sequence;

b) providing a primer that is complementary to the TSA probe;

c) providing one or more target probes comprising a linear single-stranded DNA molecule, the target probes comprising at least two target-complementary sequences that are not joined to each other, wherein the 5'-end of a first target-complementary sequence is complementary to the 5'-end of the target nucleic acid sequence, and wherein the 3'-end of a second target-complementary sequence is complementary to the 3'-end of the target nucleic acid sequence, and wherein the target probe that comprises the first target-complementary sequence also comprises a promoter that is joined to the 3'-of the first target-complementary sequence, wherein the promoter binds an RNA polymerase that lacks helicase-like activity and that can transcribe RNA using a single-stranded promoter;

d) contacting the TSA probe with the target nucleic acid sequence and incubating under hybridization conditions, such that the end portions anneal adjacently to the target nucleic acid sequence to form a TSA probe-target complex;

e) contacting the TSA probe-target complex with a ligase under ligation conditions, such that a target sequence amplification circle (TSA circle) is formed;

f) contacting the TSA circle with the primer and incubating under hybridization conditions to form a TSA circle-primer complex;

g) contacting the TSA circle-primer complex with a strand-displacing DNA polymerase under strand-displacing polymerization conditions, such that a rolling circle replication product comprising multiple copies of the target nucleic acid sequence is formed;

h) contacting the target probes with the rolling circle replication product and incubating under hybridization conditions, such that the target-complementary sequences anneal adjacently to the rolling circle replication product to form a rolling circle replication product-target complex;

i) contacting the rolling circle replication product-target complex with a ligase under ligation conditions to form a transcription substrate;

j) contacting the transcription substrate with the RNA polymerase under transcription conditions to form a transcription product; and

k) detecting the transcription product.

79. (new) The method of claim 78, further comprising the step of releasing the transcription substrate obtained in step (i) from the rolling circle replication product complex, after step (i), but prior to step (j).

80. (new) The method of claim 78, further comprising repeating steps (a) through (j) or steps (a) through (k).

81. (new) A method for detecting a target nucleic acid sequence, the method comprising:

a) providing one or more target probes comprising a linear single-stranded DNA molecule, the target probes comprising at least two target-complementary sequences that are not joined to each other, wherein the 5'-end of a first target-complementary sequence is complementary to the 5'-end of the target nucleic acid sequence, and wherein the 3'-end of a second target-complementary sequence is complementary to the 3'-end of the target nucleic acid sequence, and wherein the target probe that comprises the first target-complementary sequence also comprises a promoter that is joined to the 3'-end of the first target-complementary sequence, which promoter binds an RNA polymerase that lacks helicase-like activity and that can transcribe RNA using a single-stranded promoter;

b) contacting the target probes with the target nucleic acid sequence and incubating under hybridization conditions, such that the target probes anneal to the target nucleic acid sequence to form a target probe-target complex;

c) contacting the target probe-target complex with a DNA polymerase under DNA polymerization conditions to form one or more DNA polymerase extension products that are adjacent to the 5'-end of a target-probe, such that a complex is formed;

d) contacting the complex with a ligase under ligation conditions to form a transcription substrate;

e) contacting the transcription substrate with the RNA polymerase to form a transcription product; and

f) detecting the transcription product.

82. (new) The method of claim 81, further comprising repeating steps (a) through (e) or steps (a) through (f).